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Head of the Department

PRESS RELEASE

AUEB-NKUA Statistical Data Science Conference 2023, Aegina, Greece



The first “AUEB-NKUA Statistical Data Science Conference” was successfully, jointly, organized by the Department of Statistics, Athens University of Economics and Business (Greece) and the Statistics Section of the Department of Mathematics, National Kapodistrian University of Athens (Greece). The Conference took place on September 6th – 8th, 2023, in Aegina, Greece.

The main focus of the Conference was on the utilization of Statistical Machine Learning and Modelling, within the context of Modern Data Science, with particular emphasis being placed on the integration of AI and the resolution of challenges associated with vast and limited datasets, as well as high-dimensional problems.

The Conference comprised **19 Oral Presentations**, including **3 Short Courses**, as well as **8 Poster Presentations**, all followed by informal discussions and exchange of ideas between participants, making this event the perfect opportunity for insightful research exchange and networking, among University Professors, Researchers and Ph.D. students of different fields of Data Science expertise.

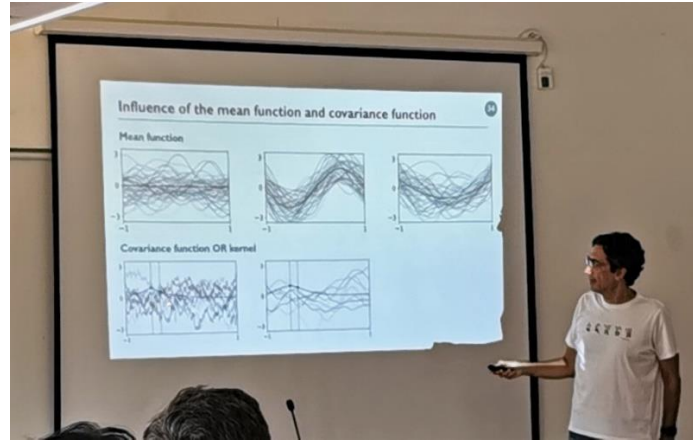
On the first day of the Workshop (September 6th, 2023), all participants gathered at the Conference Venue, where they received a warm welcome from the Head of the Department of Statistics, Professor Ioannis Ntzoufras. Although it was pouring outside, everyone made it on time and seemed to be impatiently waiting for the event to commence:



Stefanos Kechagias (SAS) officially initiated the Conference, by delivering the first part of their Short Course (**Short Course 2**), entitled: **“Data story telling”**:

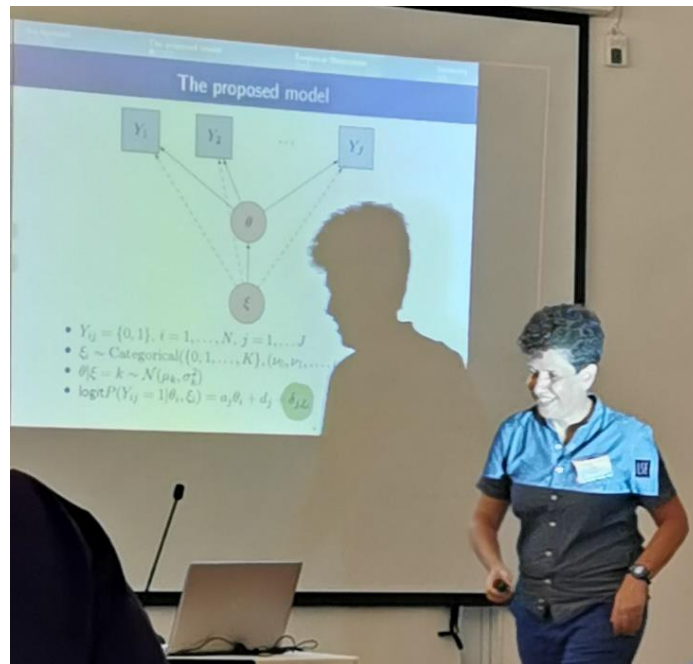


Their presentation was followed by a short coffee break, which gave all attendees the opportunity to slowly get to know each other and prepare for the next Short Course Presentation (**Short Course 1**): **“Gaussian Processes”** (Part A), by **Petros Dellaportas** (AUEB & UCL):

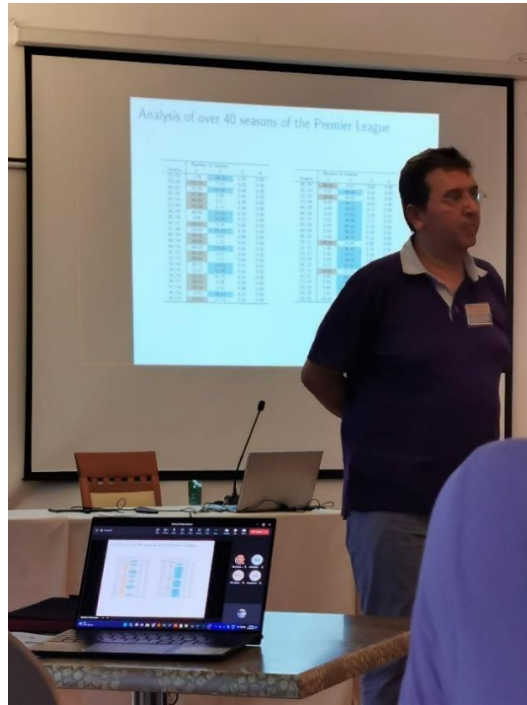


The **First Session** of the Conference, then, occurred, comprising the following Oral Presentations:

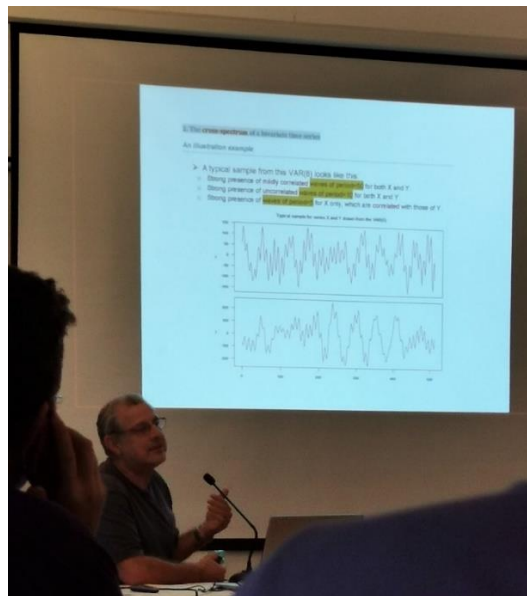
1. **Irini Moustaki** (LSE): **“DIF analysis with unknown groups and anchor items”**:



2. **Ioannis Ntzoufras** (AUEB): *“Assessing competitive balance in the English premier league using a stochastic block model”*:



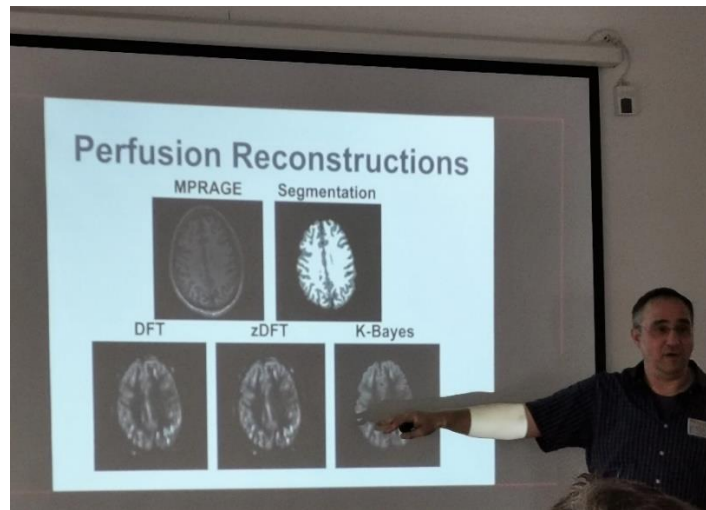
3. **Evangelos Ioannidis** (AUEB): *“A new non-parametric cross-spectrum estimator”*:



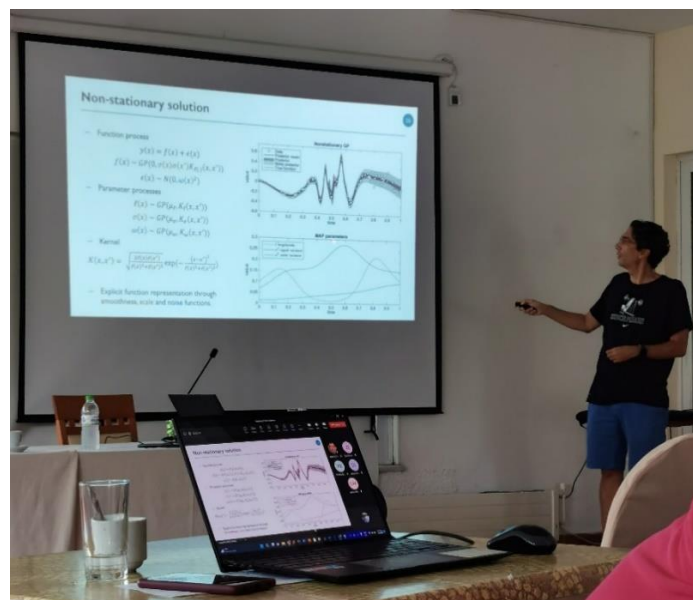
Upon completion of the three (3) pre-mentioned Oral Presentations, the first day of the Conference slowly came to an end. It was still raining, although not that heavily, so we decided not to leave the Conference Venue. Instead, we all grabbed pizza and drinks and spent a wonderful evening, discussing and laughing our heads off at the comfort of our “Aegina home”:



Day 2 (September 7th, 2023) started off with Part A of the third Short Course (**Short Course 3**), entitled “**Bayesian methods for imaging data**”, by **John Kornak** (University of California San Francisco, UCSF):

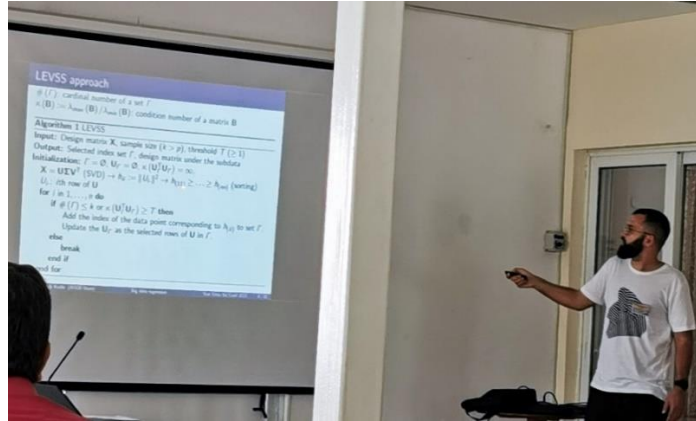


The Short Course was followed by a short coffee break, upon the completion of which, **Petros Dellaportas** (AUEB & UCL) delivered the second part (Part B), of their Short Course (**Short Course 1**), entitled “**Gaussian Processes**”:



A quick Lunch Break, then, took place; once it was over, we were ready for the **Second Session** of the Conference, which comprised the following Oral Presentations:

1. **Vasilis Chasiotis (AUEB): “Subdata selection for big data regression based on leverage scores”:**



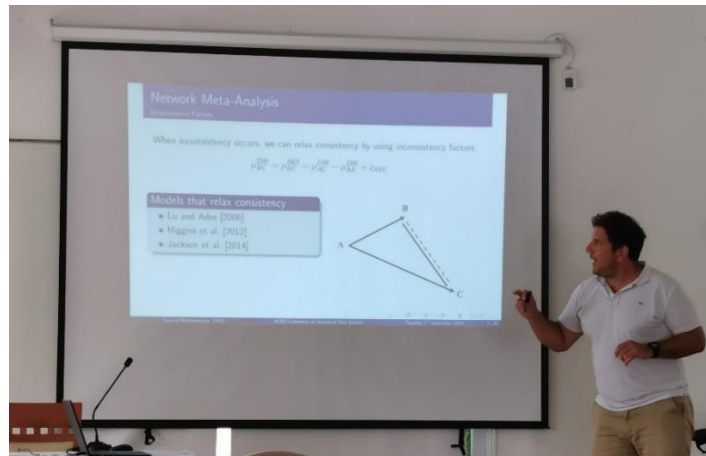
2. **Fotis Siannis (NKUA): “Longitudinal meta-analysis of percentile ratios for survival data”:**



3. **Panagiotis Papastamoulis (AUEB): “Bayesian inference for a flexible family of cure rate models”:**



4. **Stavros Nikolakopoulos** (UOI): *“Inconsistency identification in network meta-analysis via stochastic search variable selection”*:



5. **Apostolos Burnetas** (NKUA): *“Data driven ordering in inventory systems with perishable products”*:



Session 2 was followed by a relaxing 2-hour break, which provided participants with the opportunity to embark on a little “island exploration journey” and enjoy its magnificent views:





The short break was succeeded by a Poster Session. The Conference was welcoming submissions of Poster Presentations from students and researchers interested in techniques and applications in the field of Data Science:



The applicants who were, ultimately, invited for a Poster Presentation came from a multitude of Universities/Companies and the topics covered through their Presentations were rather broad, namely:

1. **“Time series analysis of scientific vs. public interest regarding obesity and its potential drivers”, by Georgios Anthimopoulos (University of the Aegean):**

Time series analysis of Scientific vs. Public Interest regarding obesity and its potential drivers.
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 Computer Simulation, Genomics and Data Analysis Laboratory, Department of Food Science and Nutrition, University of the Aegean, Greece
 ganthim@aegean.gr, nikitara@aegean.gr, kaloudis@aegean.gr, bountziouka@aegean.gr

Abstract
 The study examines the relationship between public interest and scientific research in obesity. An obesity-related research article, the body interest movement, the public and Google Trends, keywords, and trends, and scientific papers from 1980 to the present. The results show a strong positive correlation between the two series, indicating that public interest in obesity research is closely linked to scientific research. The study also identifies potential drivers of public interest, such as the World Health Organization's (WHO) declaration of obesity as a global health crisis in 2016. The findings suggest that public interest in obesity research is not only increasing but also becoming more sophisticated, with a focus on understanding the underlying mechanisms of obesity and its potential drivers. This study contributes to the understanding of the relationship between public interest and scientific research in obesity and its potential drivers, and provides insights into the factors that drive public interest in this field.

Introduction
 Obesity is a serious chronic disease with substantial health and economic costs, affecting the world for more than 30 years [1]. It represents the link between sedentary lifestyle and high-calorie diets, leading to excess body weight and associated health risks. The prevalence of obesity has increased significantly in all regions of the world [2]. The obesity rate has been increasing since the COVID-19 pandemic, especially in children and adolescents [3], which has led to a "body positivity" movement that has been discussed in the media [4]. With obesity now being a major public health challenge, it is essential to investigate whether the public interest in obesity research is increasing and what factors are driving this trend. This study aims to explore the relationship between public interest and scientific research in obesity and its potential drivers.

Methods
 We used "Google Trends" (Measurement of "body positivity" in keywords and interest) [5] to measure the link between the two series. The results of the study are presented in "Google Trends" [6] and the results of the study are presented in "Google Trends" [6]. The results of the study are presented in "Google Trends" [6]. The results of the study are presented in "Google Trends" [6].

Results
 As expected, we observed strong positive correlations between the two series. The results of the study are presented in "Google Trends" [6]. The results of the study are presented in "Google Trends" [6].

Conclusions
 Combining obesity research with substantial health and economic costs, affecting the world for more than 30 years [1]. The study examines the relationship between public interest and scientific research in obesity and its potential drivers. The findings suggest that public interest in obesity research is not only increasing but also becoming more sophisticated, with a focus on understanding the underlying mechanisms of obesity and its potential drivers. This study contributes to the understanding of the relationship between public interest and scientific research in obesity and its potential drivers, and provides insights into the factors that drive public interest in this field.

2. **“Stochastic epidemic modelling of Covid-19”, by Anastasios Apsemidis (AUEB-Stats):**

STOCHASTIC EPIDEMIC MODELLING OF COVID-19
 Apsemidis and Demiris
 Athens University of Economics and Business

The grand finale
 Day No.1197. The virus seems to have been settled.
 • New wrong model
 • Dual account for endemicity
 • New information is added
 • Vector field results
 • Save the world (Season 3)

The basic model

$$dI_t \sim NB(\theta, \nu)$$

$$\theta_t = \theta_t + \sum_{k=1}^{t-1} C_{t-k}$$

$$C_t = \lambda_t - \lambda_{t-1} - S_{t-1} - I_{t-1} - A_{t-1} - N$$

$$S_t = S_{t-1} - C_t - V_t + A - A \cdot S_{t-1} / N$$

$$I_t = \sum_{k=0}^{t-1} C_{t-k} - A \cdot I_{t-1} / N$$

$$\pi_t = \int_{-0.5}^{0.5} \pi(t) dt$$

$$p_t = p_{(t)} \cdot I(t \in [t, t_{j+1} - 1])$$

$$\lambda_t = \lambda_{(t)} \cdot I(t \in [t, t_{j+1} - 1])$$

Loss of Immunity
 After t^* days,

$$r_t = (1 - \beta)^t \sum_{k=0}^{t-1} \pi_{t-k} \cdot C_k$$
 recovered individuals' return to susceptibility.
 Thus, the S-state is updated via

$$S_t = S_{t-1} - C_t - V_t + A \cdot (1 - S_{t-1} / N) - r_{t-1}$$
 The complete model accounts for endemicity through
 • demography
 • return to susceptibility

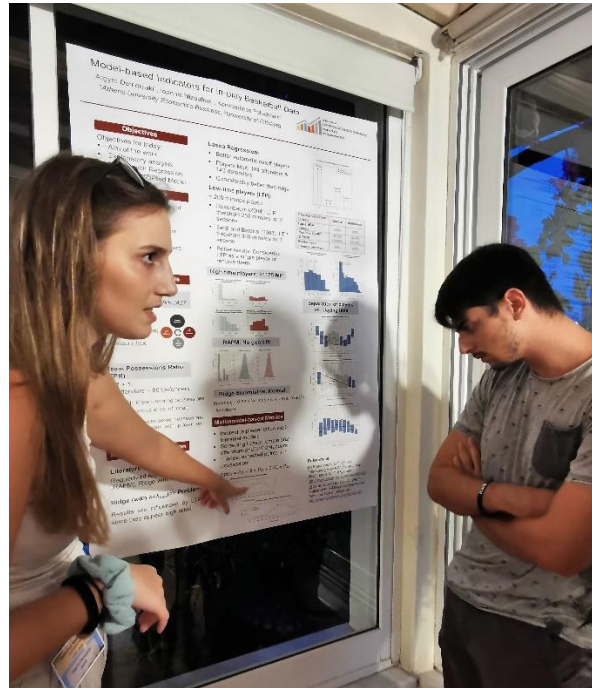
Results
 R_t - Greece
 Cumulative Total Cases - UK

Infection rate predictions
 Use of 1 or 2 PC's of daily mobility $m_{i,t}$, either smoothed by the serial interval or not.
 Post-processing of λ_t :

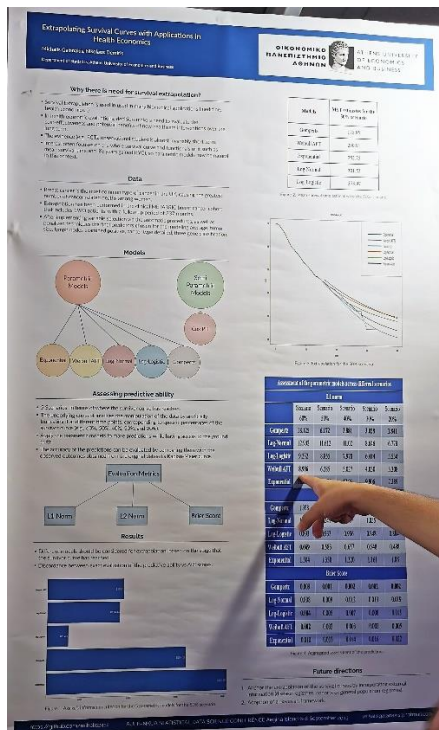
$$E[\log(\lambda_t) | m_t] = g(m_t)$$
 Forms of $g(\cdot)$
 • Linear regression
 • Thin-plate smoothing
 • Extreme-gradient boosted trees

Final Remarks
 • Data from Greece, UK and USA
 • Only publicly available data
 • Computationally intensive training
 • Different behaviour after 2021
 • The end (?)

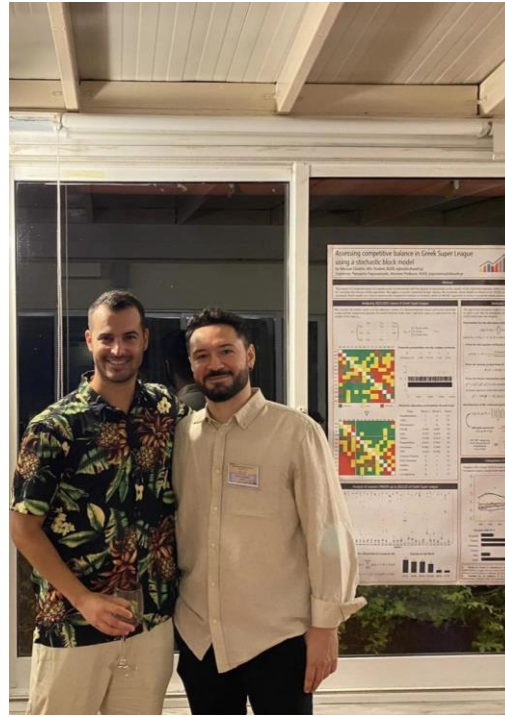
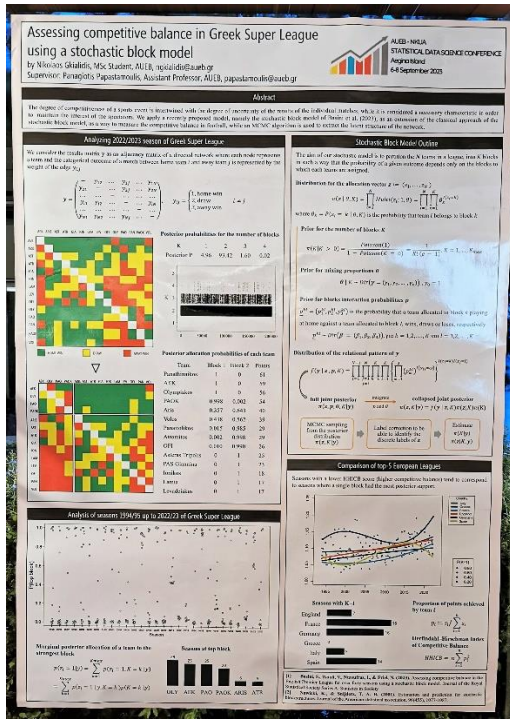
3. **“Model-based performance indicators for in-play basketball data”, by Argyro Damoulaki (AUEB-Stats):**



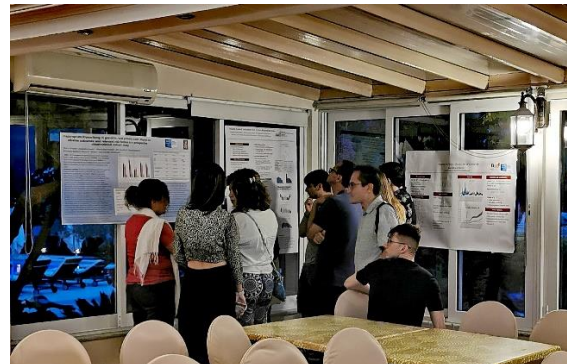
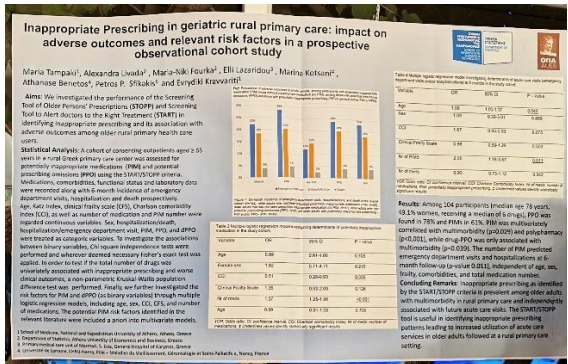
4. **“Extrapolating survival curves with applications in health economics”, by Michalis Galanakis (AUEB-Stats & Circana):**



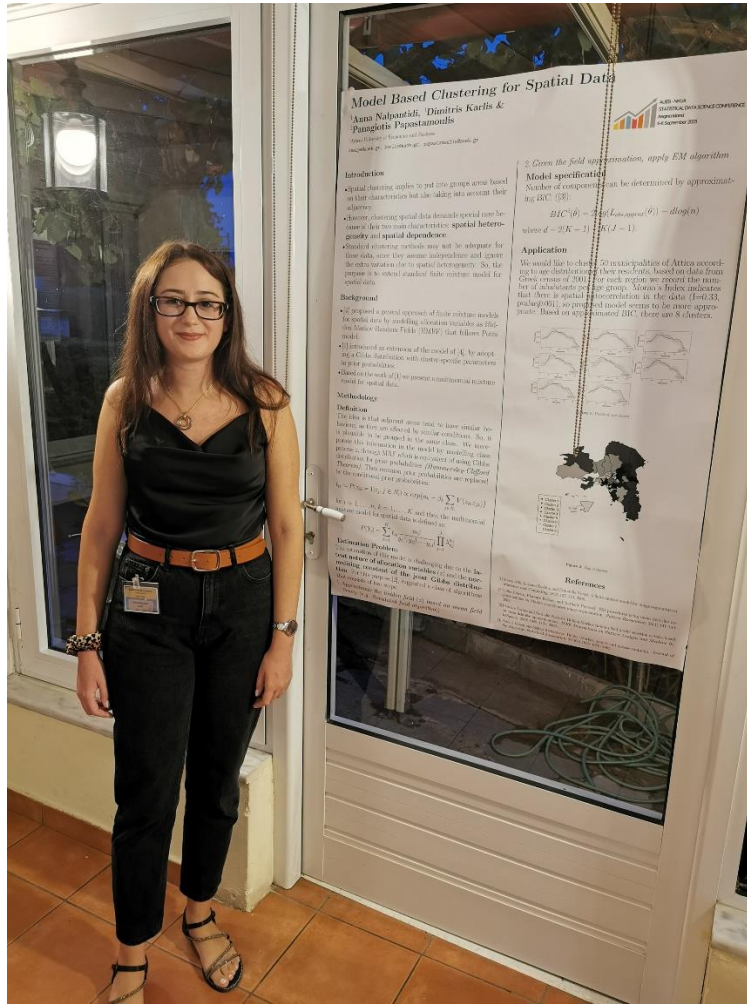
5. **“Assessing competitive balance in the Greek Super League using a stochastic block model”,** by Nikolaos Gkialidis (AUEB-Stats):



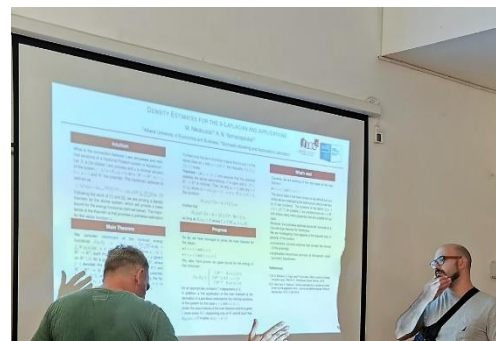
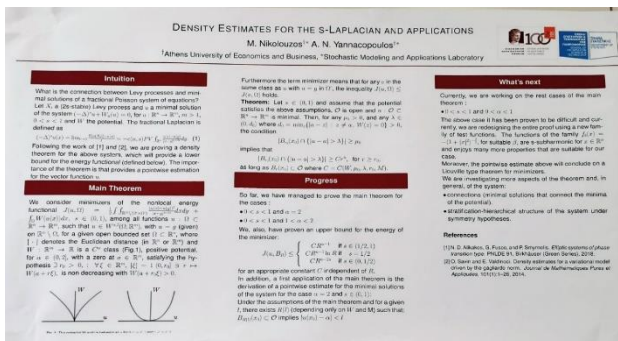
6. **“Inappropriate prescribing in geriatric rural primary care: impact on adverse outcomes and relevant risk factors in a prospective observational cohort study”,** by Alexandra Livada (AUEB-Stats):



7. "Model based clustering for spatial data", by Anna Nalpantidi (AUEB-Stats):



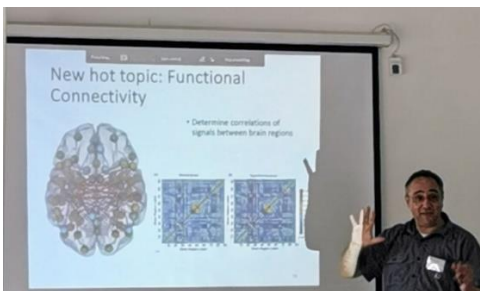
8. "Density estimates for the s-Laplacian and applications", by Michalis Nikolouzos (AUEB-Stats):



We, then, called it quits for the day; we went downtown for some pistachio ice cream and, eventually, came back to the Conference Venue, to take a moment to relax, get some drinks and talk Statistics by the pool:



Day 3 (September 8th, 2023) was off to a good start, with the delivery of Part B, of the third Short Course (**Short Course 3**), entitled “**Bayesian methods for imaging data**”, by **John Kornak** (UCSF), followed by the delivery of Part B, of the second Short Course (**Short Course 2**), entitled “**Data story telling**”, by **Stefanos Kechagias** (SAS):



The **Third**, and final, **Session** of the Conference, revolved around the following Oral Presentations:

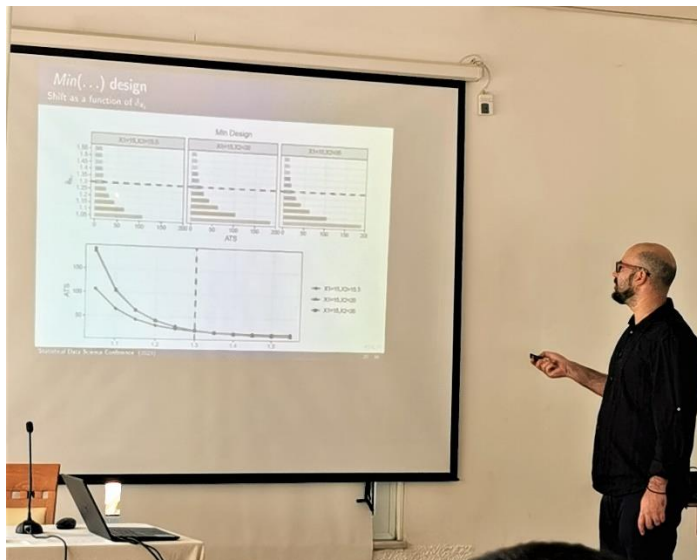
1. **Dimitris Karlis (AUEB): “Sparse High Dimensional time series using a composite likelihood approach”:**



2. **Nikos Demiris (AUEB): “Sample size determination for prediction models via learning-type curves”:**



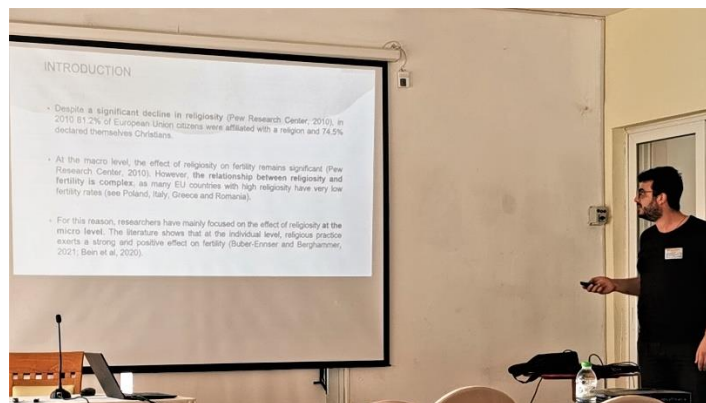
3. **Theodoros Perdakis (AUEB): “Schemes for monitoring time between events and bivariate amplitude data”:**



4. **Vasilis Palaskas** (AUEB & OpenBet): **“Bayesian skill importance for volleyball set determination”**:



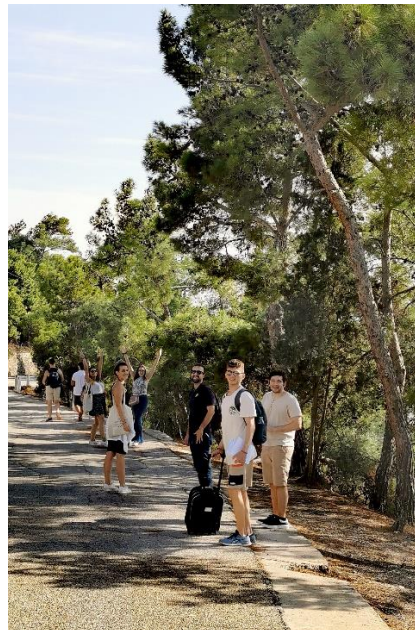
5. **Charalampos Dantis** (AUEB): **“The association between religiosity and fertility intentions via grandparenting: Evidence from GGS data”**:



As the Conference came to an end, we were filled with emotions of utter joy. Emotions converging to the notions of mutual respect towards each other's research work, thoughtful feedback, constructive conversations, empathetic interpersonal communication, networking appreciation/exploration and sheer contentment! Before leaving the Venue, we made sure to take a group picture and take delight in the beautiful weather and greenery, surrounding us, on our way back to the Port of Aegina.

We would like to thank everyone involved in this Conference, for turning it into such a memorable experience!

Till next year!



For more information on “AUEB-NKUA Statistical Data Science 2023”, please refer to its Official Website:
<https://aueb-analytics.wixsite.com/stat-data-science>